(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 998 170 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
31.10.2001 Bulletin 2001/44

(43) Date of publication A2:
03.05.2000 Bulletin 2000/18

(21) Application number: **99308493.8**

(22) Date of filing: **27.10.1999**

(51) Int Cl.[7]: **H05B 33/10**, H01L 51/40, H01L 21/00, C23C 14/56

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **28.10.1998 JP 32280998**

(71) Applicant: **TDK Corporation**
Chuo-ku, Tokyo 103-8272 (JP)

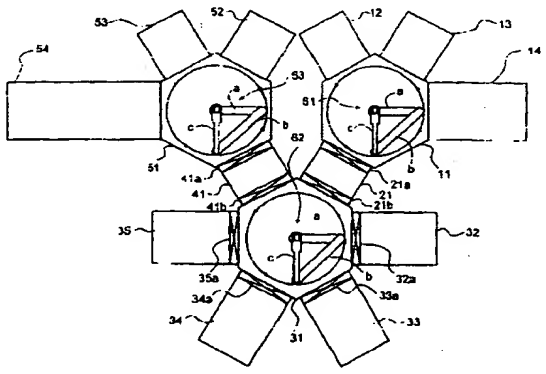
(72) Inventors:
- **Tanabe, Hiroshi**
  Chuo-ku, Tokyo 103-8272 (JP)
- **Yamamoto, Hiroshi**
  Chuo-ku, Tokyo 103-8272 (JP)
- **Fukuyu, Kengo**
  Chuo-ku, Tokyo 103-8272 (JP)
- **Onitsuka, Osamu**
  Chuo-ku, Tokyo 103-8272 (JP)

(74) Representative: **Sarup, David Alexander et al**
Raworth, Moss & Cook,
Raworth House,
36 Sydenham Road
Croydon, Surrey CRO 2EF (GB)

(54) System and process for fabricating an organic electro-luminescent display device

(57) The invention provides an organic EL display device fabrication system comprising a loading side normal-pressure delivery chamber 11 including a first substrate delivery means 61 for delivering a substrate with no film formed thereon, and a loading chamber 21 connected thereto for introducing the substrate from loading side normal-pressure delivery chamber 11 at normal pressure into a vacuum delivery chamber 31 at a vacuum. The vacuum delivery chamber 31 is connected to loading chamber 21 and includes a second substrate delivery means 62 for delivering the substrate in a vacuum, and has one or two or more film formation chambers 32 to 35 connected thereto. The system further comprises an unloading chamber 41 connected thereto for delivering the substrate out of vacuum delivery chamber 31 at a vacuum into an unloading side normal-pressure delivery chamber 51 at normal pressure. The unloading side normal-pressure delivery chamber 51 is connected to unloading chamber 41 and includes a third substrate delivery means 63 for delivering a substrate with films formed thereon. An inert gas atmosphere having a moisture content of up to 100 ppm is maintained in both unloading chamber 41 and unloading side normal-pressure delivery chamber 51 at normal pressure. The invention also provides an organic EL display device fabrication process using this fabrication system.

FIG. 1



EP 0 998 170 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 30 8493

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 01, 29 January 1999 (1999-01-29) & JP 10 270164 A (IDEMITSU KOSAN CO LTD), 9 October 1998 (1998-10-09) * abstract *	1-21	H05B33/10 H01L51/40 H01L21/00 C23C14/56
A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 13, 30 November 1998 (1998-11-30) & JP 10 214682 A (MITSUBISHI CHEM CORP), 11 August 1998 (1998-08-11) * abstract *	1-21	
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 08, 30 August 1996 (1996-08-30) & JP 08 111285 A (TDK CORP), 30 April 1996 (1996-04-30) * abstract *	1-21	
A	US 5 817 366 A (ARAI MICHIO ET AL) 6 October 1998 (1998-10-06) * the whole document *	1-21	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H05B H01L C23C
A	EP 0 865 229 A (IDEMITSU KOSAN CO) 16 September 1998 (1998-09-16) * claims 1-6; figure 2 *	1-21	
A	EP 0 859 539 A (TDK CORP) 19 August 1998 (1998-08-19) * page 10, line 39 - page 11, line 36; claims 1-12; figure 5 *	1-21	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	10 September 2001	Drouot-Onillon, M-C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 99 30 8493

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-09-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 10270164 A	09-10-1998	NONE	
JP 10214682 A	11-08-1998	NONE	
JP 08111285 A	30-04-1996	NONE	
US 5817366 A	06-10-1998	NONE	
EP 0865229 A	16-09-1998	JP 2845856 B	13-01-1999
		JP 10255973 A	25-09-1998
		TW 392419 B	01-06-2000
		US 6001413 A	14-12-1999
EP 0859539 A	19-08-1998	JP 10233283 A	02-09-1998
		JP 10241858 A	11-09-1998
		US 6049167 A	11-04-2000

EPO FORM P045e

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82